Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A composition for dyeing keratin fibers, said composition comprising, in a medium suitable for dyeing,

(i) at least one cationic direct dye of formula (I), (II), (III) or (III') below:

$$A-D=D-\begin{array}{c} R_{1} \\ X \\ X \end{array} \qquad \begin{array}{c} R_{2} \\ R_{2} \end{array} \qquad (1)$$

wherein, in said formula (I):

D represents a nitrogen atom and a -CH group,

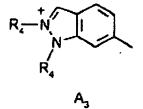
R₁ and R₂ are identical or different and represent a hydrogen atom, a C₁-C₄ alkyl radical which is unsubstituted or substituted with a -CN, -OH or -NH₂, or R₁ and R₂ form, with a carbon atom of the benzene ring, an optionally oxygenated or nitrogenous heterocycle a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with one or more C₁-C₄ alkyl radicals or a 4'aminophenyl radical;

Attorney Docket No.: 05725.0384-01

R₃ and R'₃ are identical or different and represent a hydrogen atom, a halogen atom selected from chlorine, bromine, iodine and fluorine, a cyano group, a C1-C4 alkyl radical, or a C₁-C₄ alkoxy or acetyloxy radical;

X- represents an anion;

A represents a group selected from structures A_1 to A_{10} A_{17} and A_{19} below:



Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

and

wherein

 R_4 represents a C_1 - C_4 alkyl radical which is unsubstituted or substituted with a hydroxyl radical; and

R₅ represents a C₁-C₄ alkoxy radical;

with the provisos that when D represents -CH, A represents A_4 or A_{13} , and R_3 is other than an alkoxy radical, then R_1 and R_2 do not simultaneously represent a hydrogen atom; and

when D represents N, A is chosen from A₁-A₃, A₅-A₁₂, A₁₄-A₁₇ and A₁₉;

$$R_{g}$$

wherein, in said formula (II):

Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

R₆ represents a hydrogen atom or a C₁-C₄ alkyl radical;

R₇ represents a hydrogen atom, an alkyl radical which is unsubstituted or substituted with a -CN radical or with an amino group, and a 4'-aminophenyl radical, or R₇ forms, with R₆, an optionally oxygenated and/or-nitrogenous heterocycle a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with a C₁-C₄ alkyl radical;

R₈ and R₉ are identical or different and represent a hydrogen atom, a halogen atom, a C₁-C₄ alkyl or C₁-C₄ alkoxy radical, or a -CN radical;

X- represents an anion;

B represents a group selected from structures B1 to B6 below:

$$R_{10}$$
 R_{10}
 R

wherein

R₁₀ represents a C₁-C₄ alkyl radical;

 R_{11} and R_{12} , which are identical or different, represents a hydrogen atom or a C_1 - C_4 alkyl radical;

$$E-D_{1}=D_{2}-(N)_{m}$$

$$X \cdot R_{15}$$

$$R_{15}$$

$$R_{15}$$

$$R_{16}$$

$$R_{16}$$

$$R_{16}$$

wherein, in said formulae (III) and (III'):

R₁₃ represents a hydrogen atom, a C₁-C₄ alkoxy radical, a halogen atom, and an amino radical;

 R_{14} represents a hydrogen atom, a C_1 - C_4 alkyl radical, or R_{14} forms, with a carbon atom of the benzene ring, a heterocycle which is optionally oxygenated and/or substituted with at least one C_1 - C_4 alkyl group;

R₁₅ represents a hydrogen atom or a halogen atom;

 R_{16} and R_{17} , which are identical or different, represents a hydrogen atom or a C_1 - C_4 alkyl radical;

 D_1 and D_2 , which are identical or different, are chosen from a nitrogen atom and a -CH group;

$$m = 0 \text{ or } 1;$$

Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

with the proviso that when R_{13} represents an unsubstituted amino group, then D_1 and D_2 simultaneously represents a -CH group and m=0;

X represents an anion; and

E represents a group from structures E1 to E8 below:

Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

wherein R' represents a C₁-C₄ alkyl radical;

with the proviso that when m=0 and D_1 represents a nitrogen atom, then E can also represents a group of structure E9 below:

wherein R' represents a C_1 - C_4 alkyl radical; with the further proviso that in said formula (III) when D_1 and D_2 are simultaneously a nitrogen atom, m=0, R_{13} is an amino radical and R_{15} is a hydrogen atom, then E is chosen from E_3 to E_5 , E_7 and E_8 ; and

- (ii) at least one cationic or amphoteric substantive polymer chosen from:
- (a) cellulosic cationic derivatives with the exception of
 Polyquaternium 10 polymeric quaternary ammonium salts of hydroxyethyl cellulose
 reacted with a trimethyl ammonium substituted epoxide;
- (b) copolymers of dimethyldiallylammonium halide and of (meth)acrylic acid;
- (c) methacryloyloxyethyltrimethylammonium halide homopolymers and copolymers;
 - (d) polyquaternary ammonium polymers selected from:
 - polymers of repeating units having formula (IV) below:

- polymers of repeating units having formula (V) below:

$$\begin{array}{c|c} CH_{3} & C_{2}H_{5} \\ \hline & | & | \\ N^{+}_{Br}(CH_{2})_{3} & N^{+}_{Br}(CH_{2})_{3} \end{array}$$

$$CH_{3} & C_{2}H_{5}$$

$$(V)$$

- and polymers of repeating units having formula (VI) below:

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
\begin{pmatrix}
CI & & \\
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&$$

wherein p represents an integer ranging from 1 to 6 approximately, D is zero or represents a group - $(CH_2)_r$ -CO- wherein r represents a number equal to 4 or 7; and

(e) vinylpyrrolidone copolymers containing cationic units.

2. (Original) A composition according to Claim 1, wherein in said formula (I), (III), or (III'), X⁻ represents an anion of chloride, methyl sulfate, or acetate.

- 3. (Original) A composition according to Claim 1, wherein said keratin fibers are human keratin fibers.
- 4. (Original) A composition according to Claim 3, wherein said human keratin fibers are human hair.
- 5. (Currently Amended) A composition according to Claim 1, wherein said at least one cationic direct dye of formula (I) is selected from the compounds having structures (I1) to (I51) (I29), (I31) to (I51), and (I53) to (I55) below:

$$CH_3$$
 $N = N$
 CH_3
 CH_3
 CH_3
 CH_3

$$H_3C-N+$$
 $CH=CH CH_3$ CI^- (13)

$$\begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \\ \end{array} \end{array} \begin{array}{c} \\ \\ \end{array} \begin{array}{c} \\$$

$$H_3C-N+$$
 $CH=CH CH_3$ CI^- (15)

$$CH_3$$
 CH_3
 CH_3

$$N = N - NH_2 \qquad CI - (110)$$

$$CH_3$$

$$CH_3$$
 $N+$
 $N=N$
 CH_3
 $CH_$

$$CH_3$$
 $N+$
 $N=N C_2H_5$
 C_2H_5
 C_2H_5

$$CH_3$$
 $N+$
 $N=N$
 C_2H_4-CN
 C_2H_4-CN
 C_2H_4-CN
 C_2H_4-CN

$$CH_3$$
 $N+$
 $N=N$
 CH_3
 CH_3
 CH_3
 CH_3

$$CH_3$$
 $N+$
 $N=N NH_2$
 $CI^ CH_3$
 $CI^ CH_3$
 $CI^ CI^ CI$

$$H_3C$$
 $N+$
 $N=N$
 $N=N$
 C_2H_5
 C_1
 C_2H_5

$$\begin{array}{c}
CH_3 \\
N-N+\\
CH_3
\end{array}$$

$$CH_3 \\
CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$
 $N=N$
 CH_2
 CH_2 - CH_2 - NH_2
 CH_3

$$CH_3$$

$$N = N - V$$

$$CH_2 - CH_2 - CN$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (124)$$

$$CH_3 \qquad CH_3 \qquad CI \qquad (124)$$

$$CH_3$$
 $N+N$
 CH_3
 CH_3
 CH_3
 CH_3
 CH_3
 CH_3

$$\begin{array}{c|c}
CH_3 \\
N+ \\
N=N- \\
\end{array}$$

$$\begin{array}{c|c}
NH_2 & CI \\
\end{array}$$
(126)

$$CH_3$$
 $N+$
 $N=N$
 CH_2 - CH_2 - CN
 CI^- (127)

$$CH_3$$
 $N+$
 $N=N$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$

$$CH_3$$
 CH_3 CH_3

$$\begin{array}{c|c} & CH_3 \\ \hline \\ CH_3 \\ \hline \end{array} \quad CI - \quad (133)$$

$$H_3C-O$$
 $N=N+$
 $N=N+$

$$H_3C-O$$
 $N=N+$
 $N=N$
 CH_3
 CH_3

$$H_3C$$
 O
 $N+$
 CH_3
 CH_3
 CH_3
 CH_3

$$\begin{array}{c|c}
S \\
N+\\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3 \\
CH_3
\end{array}$$

$$\begin{array}{c|c}
CH_3
\end{array}$$

$$H_3C$$
 N^+
 CH_3
 CH_3
 CH_3
 CH_3

$$CH_3$$
 $N+$
 CH_3
 $N+$
 CH_3
 $N+$
 CH_3

$$CH_3$$
 $N+$
 $N=N$
 CH_3
 CH_3
 CH_3
 CH_3

$$CH_3$$
 $N+$
 $N=N CH_3$
 CH_3
 CH

$$\begin{array}{c|c}
CH_3 \\
N+\\
CH_3
\end{array}$$

$$CH_3 CI^{-} (147)$$

$$CH_3 CI^{-} (147)$$

$$CH_3$$
 $N+$
 $N=N$
 CH_3
 CH_3
 CH_3SO_4
 CH_3SO_4
 CH_3

$$C_2H_5$$
 $N+$
 $N=N CH_3$
 CH_3SO_4
 CH_3
 CH_3

$$S$$
 $N+$
 $N=$
 N
 CI^{-}
 CI^{-}
 CI^{-}
 CH_{3}

$$CH_3$$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$
 $O-CH_3$

and

$$CH_3$$
 $N+$
 $N=N$
 CH_2CH_2CN
 CH_3
 CH_3
 CH_3

6. (Original) A composition according to Claim 5, wherein said at least one cationic direct dye has structure (I1), (I2), (I14) or (I31).

7. (Original) A composition according to Claim 1, wherein said at least one cationic direct dye of formula (II) is selected from the compounds having structures (II1) to (II3), (II5), (II6), (II8), and (II10) to (II12) below:

$$H_3C$$
 $N+-S$
 $N=N-CH_3$
 CH_3
 CH_3

$$H_3C$$
 $N+$
 $N=N CH_3$
 CH_3
 CH_3
 CH_3
 CH_3

$$H_3C$$
 $N+$
 $N=N$
 CH_3
 CH_3
 CH_3
 CH_3
 CH_3

$$H_3C$$
 S
 $N+N+N=N-N$
 CH_3
 CH_3
 CH_3
 CH_3
 CH_3

and

8. (Original) A composition according to Claim 1, wherein said at least one cationic direct dye of formula (III) is selected from the compounds having structures (III1) to (III18) below:

$$H_3C$$
 $N+$
 $CH=N-N$
 CH_3
 CH_3
 CH_3
 CH_3

$$H_3C-N+$$
 $CH=N-N CH_3SO_4$ (III4)

$$H_3C-N+$$
 $CH=N-N CH_3$
 $CI^ CII_5$

$$CH_3$$
 CH_3
 CH_3

$$H_3C-N_+$$
 $CH=N-N-K$ CI . (III8)

$$H_3C-N+$$
 $CH=N-N$
 CH_3
 CI
 CI
 CI
 $CIII9)$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH_3SO_4$$

$$CH = N - N - CH_3 - CH_3 SO_4 - (III12)$$

$$CH_3$$

$$H_3C-N+$$
 $CH=N-N CH_3$
 CH_3SO_4
 CH_3SO_4
 CH_3SO_4
 CH_3SO_4

$$CH = CH - CH_{3} CH_{3}COO^{-}$$
 (III(15)

$$H_3C-N+$$
 $CH=N-N$
 CH_3
 CH_3
 $CI^ (III17)$

and

CI—N=N—N+
$$CI^{-}$$

$$CI^{-}$$

$$CI^{-}$$

$$CI^{-}$$

$$CI^{-}$$

$$CH_{3}$$

- 9. (Original) A composition according to Claim 8, wherein said at least one cationic direct dye of formula (III) has structure (III4), (III5) or (III13).
- 10. (Original) A composition according to Claim 1, wherein said at least one cationic direct dye of formula (III') is selected from the compounds having structures (III'1) to (III'3) below:

and

11. (Original) A composition according to Claim 1, wherein said at least one cationic direct dye of formulae (I), (II) or (III') is present in an amount ranging from about 0.001 to about 10% by weight relative to the total weight of the composition.

Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

12. (Original) A composition according to Claim 11, wherein said at least one cationic direct dye of formulae (I), (II), (III) or (III') is present in amount ranging from about 0.005 to about 5% by weight relative to the total weight of the composition.

- 13. (Currently Amended) A composition according to Claim 1, wherein said at least one cationic or amphoteric substantive polymer is Polyquaternium 24 a polymeric quaternary ammonium salt of hydroxyethyl cellulose reacted with a lauryl dimethyl ammonium substituted epoxide.
- 14. (Original) A composition according to Claim 1, wherein said at least one cationic or amphoteric substantive polymer is a copolymer of dimethyldiallylammonium chloride and of acrylic acid (80/20 by weight).
- 15. (Original) A composition according to Claim 1, wherein said at least one cationic or amphoteric substantive polymer is a crosslinked poly(methacryloyloxyethyltrimethylammonium chloride) homopolymer, as a 50% dispersion in mineral oil; the crosslinked copolymer of acrylamide and of methacryloyloxyethyltrimethylammonium chloride (20/80 by weight), as a 50% dispersion in mineral oil; or the methosulphate of the copolymer of methacryloyloxyethyl-trimethylammonium and of methacryloyloxyethyl-dimethyl-acetylammonium.
- 16. (Original) A composition according to Claim 1, wherein said at least one cationic or amphoteric substantive polymer is:
- a) a vinylpyrrolidone polymer containing dimethylaminoethyl methacrylate units;

b) a vinylpyrrolidone polymer containing methacrylamidopropyltrimethylammonium units; or

- c) a vinylpyrrolidone polymer containing methylvinylimidazolium units.
- 17. (Original) A composition according to Claim 1, wherein said at least one cationic or amphoteric substantive polymer is present in an amount ranging from about 0.01 to about 10% by weight relative to the total weight of the composition.
- 18. (Original) A composition according to Claim 17, wherein said at least one cationic or amphoteric substantive polymer is present in an amount ranging from about 0.1 to about 5% by weight relative to the total weight of the composition.
- 19. (Original) A composition according to Claim 1, wherein said medium suitable for dyeing comprises water or a mixture of water and at least one organic solvent.
- 20. (Original) A composition according to Claim 1, wherein said composition has a pH ranging from about 2 to about 11.
- 21. (Original) A composition according to Claim 20, wherein said composition has a pH ranging from about 5 to about 10.
- 22. (Original) A composition according to Claim 1, further comprising at least one additional direct dye.
- 23. (Original) A composition according to Claim 22, wherein said at least one additional direct dye is a nitrobenzene dye, anthraquinone dye, naphthoquinone dye, triarylmethane dye, xanthine dye, or an azo dye that is non-cationic.
- 24. (Original) A composition according to Claim 1, further comprising at least one oxidation base selected from para-phenylenediamines,

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bis(phenyl)alkylenediamines, para-aminophenols, ortho-aminophenols and heterocyclic bases.

- 25. (Original) A composition according to Claim 24, wherein said at least one oxidation base is present in an amount ranging from about 0.0005 to about 12% by weight relative to the total weight of the dye composition.
- 26. (Original) A composition according to Claim 25, wherein said at least one oxidation base is present in an amount ranging from about 0.005 to about 6% by weight relative to the total weight of the dye composition.
- 27. (Original) A composition according to Claim 24, further comprising at least one coupler selected from meta-phenylenediamines, meta-aminophenols, meta-diphenols and heterocyclic couplers.
- 28. (Original) A composition according to Claim 27, wherein said at least one coupler is present in an amount ranging from about 0.0001 to about 10% by weight relative to the total weight of the dye composition.
- 29. (Original) A composition according to Claim 28, wherein said at least one coupler is present in an amount ranging from about 0.005 to about 5% by weight relative to the total weight of the dye composition.
- 30. (Original) A composition according to Claim 1, further comprising at least one oxidizing agent.
- 31. (Original) A composition according to Claim 30, wherein said at least one oxidizing agent is hydrogen peroxide, urea peroxide, alkali metal bromate, a persalt, or an enzyme.

Application No.: 10/761,213

Attorney Docket No.: 05725.0384-01

32. (Original) A method for dyeing keratin fibers, said method comprising applying at least one dyeing composition according to Claim 1 to said keratin fibers, and allowing said at least one dyeing composition to remain on said keratin fibers for a period of time sufficient to develop the desired coloration.

- 33. (Original) A method for dyeing keratin fibers according to Claim 32, further comprising rinsing said keratin fibers after said period of time sufficient to develop the desired coloration.
- 34. (Original) A method for dyeing keratin fibers according to Claim 33, further comprising, after said rinsing, washing said keratin fibers with shampoo, rinsing said keratin fibers again, and drying said keratin fibers.
- 35. (Original) The method according to Claim 33, wherein said period of time ranges from 3 to 60 minutes.
- 36. (Original) The method according to Claim 35, wherein said period of time ranges from 5 to 40 minutes.
- 37. (Currently Amended) A method for dyeing keratin fibers, said method comprising
- one cationic direct dye of formula (I), (II), (III) or (III') as defined in Claim 1, and at least one exidation base with a composition (B1), said composition (B1) comprising, in a medium suitable for dyeing, at least one exidizing agent, wherein said composition (A1) or said composition (B1) contains at least one cationic or amphotoric substantive polymer as defined in Claim 1, mixing a first composition with a second composition, and

(2) applying said mixture of said composition (A1) and said composition (B1) to said keratin fibers for a period of time sufficient to dye said keratin fibers, wherein said mixing occurs before the time of application to said keratin fibers applying said mixture of said first composition and said second composition to said keratin fibers for a period of time sufficient to dye said keratin fibers, wherein said mixing occurs before the time of application to said keratin fibers,

wherein said first composition comprises at least one oxidation base and at least one cationic direct dye of formula (I), (II) or (III') below:

$$A-D=D-\begin{matrix} R_1 \\ X \\ R_3 \end{matrix} - N \begin{matrix} R_1 \\ R_2 \end{matrix}$$
 (1)

wherein, in said formula (I):

D represents a nitrogen atom and a -CH group,

 R_1 and R_2 are identical or different and represent a hydrogen atom, a C_1 - C_4 alkyl radical which is unsubstituted or substituted with a -CN, -OH or -NH₂, or R_1 and R_2 form, with a carbon atom of the benzene ring, a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with one or more C_1 - C_4 alkyl radicals or a 4'aminophenyl radical;

Attorney Docket No.: 05725.0384-01

R₃ and R'₃ are identical or different and represent a hydrogen atom, a halogen atom selected from chlorine, bromine, iodine and fluorine, a cyano group, a C₁-C₄ alkyl radical, or a C₁-C₄ alkoxy or acetyloxy radical;

X- represents an anion;

A represents a group selected from structures A₁ to A₁₇, and A₁₉ below:

| R ₄ -N - A ₄ | N-N ₄ R ₄ A ₅ | N-N+ N N R ₄ A ₆ |
|---|---|--|
| R ₄ | R ₄ +N _N R ₄ | R ₄ N _N R ₄ A ₉ |
| N. N. R. 4 | R ₅ -\(\begin{picture}(100,0) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ | R ₄ O. N+ R ₄ A ₁₂ |
| R ₄ | S R ₄ | N N+ R ₂ |
| R ₄ N+ S A ₁₆ | R ₄ | |

<u>and</u>

Attorney Docket No.: 05725.0384-01

wherein

R₄ represents a C₁-C₄ alkyl radical which is unsubstituted or substituted with a hydroxyl radical; and

R₅ represents a C₁-C₄ alkoxy radical;

with the provisos that when D represents -CH, A represents A₄ or A₁₃, and

R₃ is other than an alkoxy radical, then R₁ and R₂ do not simultaneously represent a

hydrogen atom; and

when D represents N, A is chosen from A₁-A₃, A₅-A₁₂, and A₁₄-A₁₇, and A₁₉;

$$R_{\epsilon}$$

wherein, in said formula (II):

R₆ represents a hydrogen atom or a C₁-C₄ alkyl radical;

R₇ represents a hydrogen atom, an alkyl radical which is unsubstituted or substituted with a -CN radical or with an amino group, and a 4'-aminophenyl radical, or R₇ forms, with R₆, a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with a C₁-C₄ alkyl radical;

R₈ and R₉ are identical or different and represent a hydrogen atom, a halogen atom, a C₁-C₄ alkyl or C₁-C₄ alkoxy radical, or a -CN radical;

X- represents an anion;

B represents a group selected from structures B1 to B6 below:

$$R_{10}$$
 R_{10}
 R

<u>wherein</u>

R₁₀ represents a C₁-C₄ alkyl radical;

Attorney Docket No.: 05725.0384-01

R₁₁ and R₁₂, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

$$E-D_{1}=D_{2}-(N)_{m}$$

$$X \cdot R_{15}$$

$$R_{15}$$

$$R_{15}$$

$$R_{16}$$

$$R_{16}$$

$$R_{16}$$

$$R_{17}$$

wherein, in said formulae (III) and (III'):

R₁₃ represents a hydrogen atom, a C₁-C₄ alkoxy radical, a halogen atom, and an amino radical;

R₁₄ represents a hydrogen atom, a C₁-C₄ alkyl radical, or R₁₄ forms, with a carbon atom of the benzene ring, a heterocycle which is optionally oxygenated and/or substituted with at least one C₁-C₄ alkyl group;

R₁₅ represents a hydrogen atom or a halogen atom;

R₁₆ and R₁₇, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

D₁ and D₂, which are identical or different, are chosen from a nitrogen atom and a -CH group;

m = 0 or 1;

with the proviso that when R₁₃ represents an unsubstituted amino group,

then D_1 and D_2 simultaneously represents a -CH group and m = 0;

X represents an anion; and

E represents a group from structures E1 to E8 below:

wherein R' represents a C1-C4 alkyl radical;

with the proviso that when m = 0 and D_1 represents a nitrogen atom, then E can also represents a group of structure E9 below:

wherein R' represents a C₁-C₄ alkyl radical; with the further proviso that in said formula (III) when D₁ and D₂ are simultaneously a nitrogen atom, m=0, R₁₃ is an amino radical and R₁₅ is a hydrogen atom, then E is chosen from E₃ to E₅, E₇ and E₈; and wherein said second composition comprises a medium suitable for dyeing and at least one oxidizing agent; and

<u>further wherein either said first composition or said second composition contains</u> <u>at least one cationic or amphoteric substantive polymer chosen from:</u>

- (a) cellulosic cationic derivatives with the exception of polymeric quaternary ammonium salts of hydroxyethyl cellulose reacted with a trimethyl ammonium substituted epoxide;
- (b) copolymers of dimethyldiallylammonium halide and of (meth)acrylic acid;

(c) methacryloyloxyethyltrimethylammonium halide

homopolymers and copolymers;

(d) polyquaternary ammonium polymers selected from:

- polymers of repeating units having formula (IV) below:

$$\begin{array}{c|c}
CH_{3} & CH_{2} \\
\hline
 & | \\
N_{2} & (CH_{2})_{3} & -N_{3} & (IV) \\
\hline
 & | CH_{3} & CH_{3}
\end{array}$$

- polymers of repeating units having formula (V) below:

$$\begin{array}{c|c} CH_{3} & C_{2}H_{5} \\ \hline & | & | \\ N \leftarrow (CH_{2})_{3} & N \leftarrow (CH_{2})_{3} \end{array}$$

$$\begin{array}{c|c} CH_{2} & CH_$$

- and polymers of repeating units having formula (VI) below:

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
 & CH_{2} \\
\hline
 & CH_{2} \\
\hline
 & CH_{2} \\
\hline
 & CH_{2} \\
\hline
 & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{2} \\
\hline
 & CH_{2} \\
\hline
 & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} \\
\hline
 & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} \\
\hline
 & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} \\
\hline
 & CH_{3}
\end{array}$$

Attorney Docket No.: 05725.0384-01

wherein p represents an integer ranging from 1 to 6 approximately, D is zero or represents a group -(CH₂)_r-CO- wherein r represents a number equal to 4 or 7;

- (e) vinylpyrrolidone copolymers containing cationic units.
- 38. (Currently Amended) A method for dyeing keratin fibers, said method comprising
- (1) mixing a composition (A2), said composition (A2) comprising at least one cationic direct dye of formula (I), (III) or (III') as defined in Claim 1, with a composition (B2), said composition (B2) comprising, in a medium suitable for dyeing, at least one oxidizing agent, wherein said composition (A2) or said composition (b2) contains at least one cationic or amphoteric substantive polymer as defined in Claim 1 mixing a first composition with a second, and
- (2) applying said mixture of said composition (A2) and said composition (B2) to said keratin fibers for a period of time sufficient to dye said keratin fibers, wherein said mixing occurs before the time of application to said keratin fibers applying said mixture of said first composition and said second composition to said keratin fibers for a period of time sufficient to dye said keratin fibers, wherein said mixing occurs before the time of application to said keratin fibers,

wherein said first composition comprises at least one cationic direct dye chosen from at least one cationic direct dye of formula (I), (II) or (III') below:

Attorney Docket No.: 05725.0384-01

$$A - D = D \xrightarrow{R_1} N \xrightarrow{R_2} (I)$$

wherein, in said formula (I):

D represents a nitrogen atom and a -CH group,

 R_1 and R_2 are identical or different and represent a hydrogen atom, a C_1 - C_4 alkyl radical which is unsubstituted or substituted with a -CN, -OH or -NH₂, or R_1 and R_2 form, with a carbon atom of the benzene ring, a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with one or more C_1 - C_4 alkyl radicals or a 4'aminophenyl radical;

R₃ and R'₃ are identical or different and represent a hydrogen atom, a halogen atom selected from chlorine, bromine, iodine and fluorine, a cyano group, a C₁-C₄ alkyl radical, or a C₁-C₄ alkoxy or acetyloxy radical;

X- represents an anion;

A represents a group selected from structures A₁ to A₁₇, and A₁₉ below:

| R ₄ -N | N-N+ R ₄ N R ₄ A ₅ | N-N+ (N) R ₄ A ₆ |
|--|---|--|
| R ₄ R ₄ R ₄ R ₄ A ₇ | RATIN NA | R ₄ N N R ₄ A ₉ |
| N-N+R4 A10 | R ₃ N=N+ | R ₄ O N+ R ₄ A ₁₂ |
| R ₄ | S A ₁₄ | N-N+R ₂ S A ₁₅ |
| R, N+ S A ₁₆ | R ₄ N+ N+ S A ₁₇ | · |

Attorney Docket No.: 05725.0384-01

and

wherein

R₄ represents a C₁-C₄ alkyl radical which is unsubstituted or substituted

with a hydroxyl radical; and

R₅ represents a C₁-C₄ alkoxy radical;

with the provisos that when D represents -CH, A represents A₄ or A₁₃, and

 R_3 is other than an alkoxy radical, then R_1 and R_2 do not simultaneously represent a

hydrogen atom; and

when D represents N, A is chosen from A₁-A₃, A₅-A₁₂, A₁₄-A₁₇, and A₁₉;

$$\begin{array}{c}
R_{B} \\
R_{9}
\end{array}$$

$$\begin{array}{c}
R_{7} \\
R_{7}
\end{array}$$
(II)

wherein, in said formula (II):

R₆ represents a hydrogen atom or a C₁-C₄ alkyl radical;

R₇ represents a hydrogen atom, an alkyl radical which is unsubstituted or substituted with a -CN radical or with an amino group, and a 4'-aminophenyl radical, or R₇ forms, with R₆, a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with a C₁-C₄ alkyl radical;

R₈ and R₉ are identical or different and represent a hydrogen atom, a halogen atom, a C₁-C₄ alkyl or C₁-C₄ alkoxy radical, or a -CN radical;

X- represents an anion;

B represents a group selected from structures B1 to B6 below:

$$R_{10}$$
 R_{10}
 R

wherein

R₁₀ represents a C₁-C₄ alkyl radical;

Attorney Docket No.: 05725.0384-01

R₁₁ and R₁₂, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

$$E - D_{1} = D_{2} - (N)_{m} - R_{13}$$

$$X \cdot R_{15} = D_{2}$$

$$R_{15} = D_{2}$$

$$R_{16} = D_{2}$$

$$R_{17} = D_{2}$$

$$R_{18} = D_{2}$$

$$R_{19} = D_{$$

wherein, in said formulae (III) and (III'):

R₁₃ represents a hydrogen atom, a C₁-C₄ alkoxy radical, a halogen atom, and an amino radical;

R₁₄ represents a hydrogen atom, a C₁-C₄ alkyl radical, or R₁₄ forms, with a carbon atom of the benzene ring, a heterocycle which is optionally oxygenated and/or substituted with at least one C₁-C₄ alkyl group;

R₁₅ represents a hydrogen atom or a halogen atom;

R₁₆ and R₁₇, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

D₁ and D₂, which are identical or different, are chosen from a nitrogen atom and a -CH group;

m = 0 or 1;

with the proviso that when R₁₃ represents an unsubstituted amino group,

then D_1 and D_2 simultaneously represents a -CH group and m = 0;

X represents an anion; and

E represents a group from structures E1 to E8 below:

wherein R' represents a C₁-C₄ alkyl radical;

with the proviso that when m = 0 and D_1 represents a nitrogen atom, then E can also represents a group of structure E9 below:

wherein R' represents a C₁-C₄ alkyl radical; with the further proviso that in said formula (III) when D₁ and D₂ are simultaneously a nitrogen atom, m=0, R₁₃ is an amino radical and R₁₅ is a hydrogen atom, then E is chosen from E₃ to E₅, E₇ and E₈; and wherein said second composition comprises a medium suitable for dyeing and at least one oxidizing agent; and

at least one cationic or amphoteric substantive polymer chosen from:

(a) cellulosic cationic derivatives with the exception of polymeric quaternary ammonium salts of hydroxyethyl cellulose reacted with a trimethyl ammonium substituted epoxide;

(b) copolymers of dimethyldiallylammonium halide and of

(meth)acrylic acid;

(c) methacryloyloxyethyltrimethylammonium halide

homopolymers and copolymers;

(d) polyquaternary ammonium polymers selected from:

- polymers of repeating units having formula (IV) below:

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
 & | \\
N_{-} \\
CH_{2})_{3} - N_{-} - (CH_{2})_{5}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3}
\end{array}$$

- polymers of repeating units having formula (V) below:

$$\begin{array}{c|c} CH_{3} & C_{2}H_{5} \\ \hline & | & | \\ N^{4} - (CH_{2})_{3} - N^{4} - (CH_{2})_{3} \end{array}$$

$$\begin{array}{c|c} CH_{3} & C_{2}H_{5} \end{array}$$

$$CH_{3} & C_{2}H_{5} \end{array}$$

$$(V)$$

- and polymers of repeating units having formula (VI) below:

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
\begin{pmatrix}
CI & \downarrow \\
N & (CH_{2})_{\overline{p}} & NH - CO - D - NH - (CH_{2})_{\overline{p}} & N - (CH_{2})_{2} & O - (CH_{2})_{2}
\end{pmatrix}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
CH_{3} & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3}
\end{array}$$

Attorney Docket No.: 05725.0384-01

wherein p represents an integer ranging from 1 to 6 approximately, D is zero or represents a group -(CH₂)_r-CO- wherein r represents a number equal to 4 or 7; and

- vinylpyrrolidone copolymers containing cationic units.
- A multi-compartment dyeing kit for dyeing 39. (Currently Amended) keratin fibers comprising at least two compartments, wherein
- a first compartment comprises a composition (A1) as defined in Claim 37 a first composition, and
- a second compartment comprises a composition (B1) as defined in Claim-37 a second composition.

wherein said first composition comprises at least one oxidation base and at least one cationic direct dye of formula (I), (II), (III) or (III') below:

wherein, in said formula (I):

$$A - D = D - \begin{pmatrix} R_1 \\ R_3 \end{pmatrix} - N \begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$
(1)

D represents a nitrogen atom and a -CH group,

R₁ and R₂ are identical or different and represent a hydrogen atom, a C₁-C₄ alkyl radical which is unsubstituted or substituted with a -CN, -OH or -NH2, or R1 and R2 form, with a carbon atom of the benzene ring, a heterocycle containing at least one

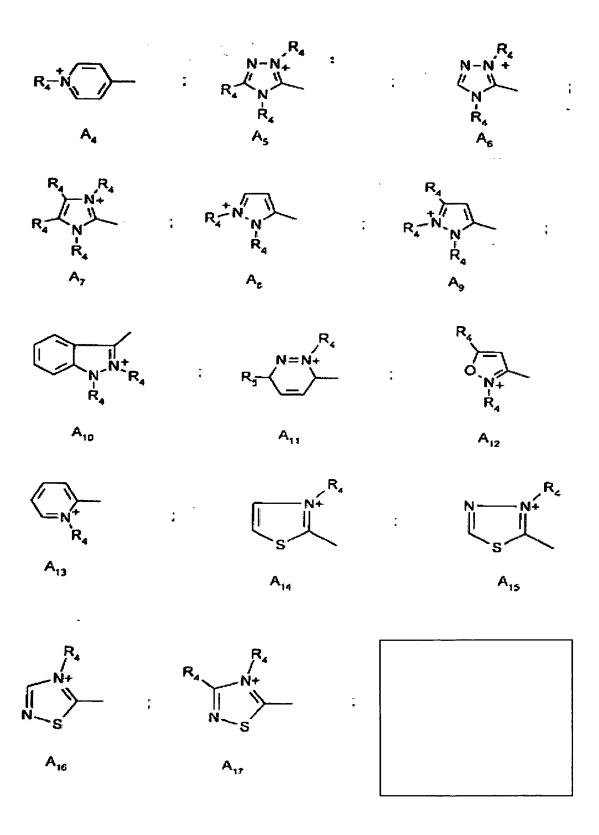
Attorney Docket No.: 05725.0384-01

heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with one or more C₁-C₄ alkyl radicals or a 4'aminophenyl radical;

R₃ and R'₃ are identical or different and represent a hydrogen atom, a halogen atom selected from chlorine, bromine, iodine and fluorine, a cyano group, a C₁-C₄ alkyl radical, or a C₁-C₄ alkoxy or acetyloxy radical;

X- represents an anion;

A represents a group selected from structures A₁ to A₁₇, and A₁₉ below:



Attorney Docket No.: 05725.0384-01

and_

wherein

R₄ represents a C₁-C₄ alkyl radical which is unsubstituted or substituted

with a hydroxyl radical; and

R₅ represents a C₁-C₄ alkoxy radical;

with the provisos that when D represents -CH, A represents A₄ or A₁₃, and

 $\underline{R_3}$ is other than an alkoxy radical, then $\underline{R_1}$ and $\underline{R_2}$ do not simultaneously represent a

hydrogen atom; and

when D represents N, A is chosen from A₁-A₃, A₅-A₁₂, A₁₄-A₁₇, and A₁₉;

wherein, in said formula (II):

R₆ represents a hydrogen atom or a C₁-C₄ alkyl radical;

R₇ represents a hydrogen atom, an alkyl radical which is unsubstituted or substituted with a -CN radical or with an amino group, and a 4'-aminophenyl radical, or R₇ forms, with R₆, a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with a C₁-C₄ alkyl radical;

R₈ and R₉ are identical or different and represent a hydrogen atom, a halogen atom, a C₁-C₄ alkyl or C₁-C₄ alkoxy radical, or a -CN radical;

X- represents an anion;

$$R_{10}$$
 R_{10}
 R

B represents a group selected from structures B1 to B6 below:

wherein

Attorney Docket No.: 05725.0384-01

R₁₀ represents a C₁-C₄ alkyl radical;

R₁₁ and R₁₂, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

$$E-D_{1}=D_{2}-(N)_{m}$$

$$X \cdot R_{15}$$

$$R_{15}$$

$$R_{15}$$

$$R_{16}$$

$$R_{16}$$

$$R_{16}$$

$$R_{17}$$

wherein, in said formulae (III) and (III'):

R₁₃ represents a hydrogen atom, a C₁-C₄ alkoxy radical, a halogen atom, and an amino radical;

R₁₄ represents a hydrogen atom, a C₁-C₄ alkyl radical, or R₁₄ forms, with a carbon atom of the benzene ring, a heterocycle which is optionally oxygenated and/or substituted with at least one C₁-C₄ alkyl group;

R₁₅ represents a hydrogen atom or a halogen atom;

 R_{16} and R_{17} , which are identical or different, represents a hydrogen atom or a C_{17} C_{4} alkyl radical;

D₁ and D₂, which are identical or different, are chosen from a nitrogen atom and a -CH group;

m = 0 or 1;

with the proviso that when R₁₃ represents an unsubstituted amino group,

then D_1 and D_2 simultaneously represents a -CH group and m = 0;

X represents an anion; and

E represents a group from structures E1 to E8 below:

$$R'-N+$$
 $E1$
 $E2$
 R'
 $E3$
 $E4$
 $E5$
 R'
 $E6$
 $E7$
 $E8$

wherein R' represents a C₁-C₄ alkyl radical;

with the proviso that when m = 0 and D_1 represents a nitrogen atom, then E can also represents a group of structure E9 below:

wherein R' represents a C₁-C₄ alkyl radical; with the further proviso that in said formula (III) when D₁ and D₂ are simultaneously a nitrogen atom, m=0, R₁₃ is an amino radical and R₁₅ is a hydrogen atom, then E is chosen from E₃ to E₅, E₇ and E₈; and wherein said second composition comprises a medium suitable for dyeing and at least one oxidizing agent; and

further wherein either said first composition or said second composition contains at least one cationic or amphoteric substantive polymer chosen from:

- (a) cellulosic cationic derivatives with the exception of polymeric quaternary ammonium salts of hydroxyethyl cellulose reacted with a trimethyl ammonium substituted epoxide;
- (b) copolymers of dimethyldiallylammonium halide and of (meth)acrylic acid;

(c) methacryloyloxyethyltrimethylammonium halide

homopolymers and copolymers;

(d) polyquaternary ammonium polymers selected from:

- polymers of repeating units having formula (IV) below:

$$\begin{array}{c|c}
CH_{3} & CH_{2} \\
\hline
 & | \\
N^{+}_{C} (CH_{2})_{3} - N^{+}_{C} (CH_{2})_{5} \\
 & | CH_{3}
\end{array}$$
(IV)

- polymers of repeating units having formula (V) below:

$$\begin{array}{c|c}
CH_{3} & C_{2}H_{5} \\
\hline
- N_{-} & (CH_{2})_{3} & -N_{-} & (CH_{2})_{3} \\
 & | Br & | Br & | C_{2}H_{5}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} & C_{2}H_{5}
\end{array}$$

- and polymers of repeating units having formula (VI) below:

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
\begin{pmatrix}
CI & CI \\
V & (CH_{2})_{\overline{p}} & NH - CO - D - NH - (CH_{2})_{\overline{p}} & N - (CH_{2})_{\overline{p}} & O - (CH_{2})_{\overline{p}}
\end{pmatrix}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
CH_{3} & CH_{3}
\end{array}$$

$$\begin{array}{c|c}
CH_{3} & CH_{3}
\end{array}$$

Attorney Docket No.: 05725.0384-01

wherein p represents an integer ranging from 1 to 6 approximately, D is zero or represents a group -(CH₂)_r-CO- wherein r represents a number equal to 4 or 7; and

- (e) vinylpyrrolidone copolymers containing cationic units.
- 40. (Currently Amended) A multi-compartment dyeing kit for dyeing keratin fibers comprising at least two compartments, wherein
- a first compartment comprises a composition (A2) as defined in Claim 38 a first composition and
- a second compartment comprises a composition (B2) as defined in Claim 38 a second composition;

wherein said first composition comprises at least one cationic direct dye of formula (I), (III) or (III') below:

wherein, in said formula_(I):

$$A-D=D-\begin{pmatrix} R_1 \\ R_2 \end{pmatrix}$$

$$X \cdot R_2$$

$$(1)$$

D represents a nitrogen atom and a -CH group,

 R_1 and R_2 are identical or different and represent a hydrogen atom, a C_1 - C_4 alkyl radical which is unsubstituted or substituted with a -CN, -OH or -NH₂, or R_1 and R_2 form, with a carbon atom of the benzene ring, a heterocycle containing at least one

Attorney Docket No.: 05725.0384-01

heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with one or more C₁-C₄ alkyl radicals or a 4'aminophenyl radical;

R₃ and R'₃ are identical or different and represent a hydrogen atom, a halogen atom selected from chlorine, bromine, iodine and fluorine, a cyano group, a C₁-C₄ alkyl radical, or a C₁-C₄ alkoxy or acetyloxy radical;

X- represents an anion;

A represents a group selected from structures A₁ to A₁₇, and A₁₉ below:

| R ₄ -N | N-N+ R ₄ N R ₄ A ₅ | N-N+ N-N+ N R A A A B |
|---|---|--|
| R ₄ R ₄ R ₄ R ₄ R ₄ A ₇ | R ₄ +N _N R ₄ | R ₄ N N R ₄ A ₉ |
| N N R ₄ A ₁₀ | N=N+ A ₁₁ | R ₄ O.N+ R ₄ A ₁₂ |
| R ₄ | S R ₄ | N N R ₂ S A ₁₅ |
| R. N+ S A ₁₆ | R ₄ N+ S A ₁₇ | |

Attorney Docket No.: 05725.0384-01

and_

wherein

R₄ represents a C₁-C₄ alkyl radical which is unsubstituted or substituted with a hydroxyl radical; and

R₅ represents a C₁-C₄ alkoxy radical;

with the provisos that when D represents -CH, A represents A₄ or A₁₃, and

R₃ is other than an alkoxy radical, then R₁ and R₂ do not simultaneously represent a

hydrogen atom; and

when D represents N, A is chosen from A₁-A₃, A₅-A₁₂, A₁₄-A₁₇, and A₁₉;

$$R_{g}$$

wherein, in said formula (II):

R₆ represents a hydrogen atom or a C₁-C₄ alkyl radical;

Attorney Docket No.: 05725.0384-01

R₇ represents a hydrogen atom, an alkyl radical which is unsubstituted or substituted with a -CN radical or with an amino group, and a 4'-aminophenyl radical, or R₇ forms, with R₆, a heterocycle containing at least one heteroatom chosen from oxygen and nitrogen and which is unsubstituted or substituted with a C₁-C₄ alkyl radical;

R₈ and R₉ are identical or different and represent a hydrogen atom, a halogen atom, a C₁-C₄ alkyl or C₁-C₄ alkoxy radical, or a -CN radical;

X- represents an anion;

B represents a group selected from structures B1 to B6 below:

$$R_{10}$$
 R_{10}
 R

wherein

R₁₀ represents a C₁-C₄ alkyl radical;

Attorney Docket No.: 05725.0384-01

R₁₁ and R₁₂, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

$$E-D_{1}=D_{2}-(N)_{m}$$

$$X \qquad R_{15}$$

$$R_{15}$$

$$R_{16}$$

$$R_{16}$$

$$R_{16}$$

$$R_{16}$$

wherein, in said formulae (III) and (III'):

R₁₃ represents a hydrogen atom, a C₁-C₄ alkoxy radical, a halogen atom, and an amino radical;

R₁₄ represents a hydrogen atom, a C₁-C₄ alkyl radical, or R₁₄ forms, with a carbon atom of the benzene ring, a heterocycle which is optionally oxygenated and/or substituted with at least one C₁-C₄ alkyl group;

R₁₅ represents a hydrogen atom or a halogen atom;

R₁₆ and R₁₇, which are identical or different, represents a hydrogen atom or a C₁-C₄ alkyl radical;

D₁ and D₂, which are identical or different, are chosen from a nitrogen atom and a -CH group;

m = 0 or 1;

Attorney Docket No.: 05725.0384-01

with the proviso that when R₁₃ represents an unsubstituted amino group,

then D_1 and D_2 simultaneously represents a -CH group and m = 0;

X represents an anion; and

E represents a group from structures E1 to E8 below:

Attorney Docket No.: 05725.0384-01

wherein R' represents a C₁-C₄ alkyl radical;

with the proviso that when m = 0 and D_1 represents a nitrogen atom, then E can also represents a group of structure E9 below:

wherein R' represents a C₁-C₄ alkyl radical; with the further proviso that in said formula (III) when D₁ and D₂ are simultaneously a nitrogen atom, m=0, R₁₃ is an amino radical and R₁₅ is a hydrogen atom, then E is chosen from E₃ to E₅, E₇ and E₈; and wherein said second composition comprises a medium suitable for dyeing and at least one oxidizing agent; and

further wherein either said first composition or said second composition contains at least one cationic or amphoteric substantive polymer chosen from: cellulosic cationic derivatives with the exception of polymeric quaternary ammonium salts of hydroxyethyl cellulose reacted with a trimethyl ammonium substituted epoxide;

(b) copolymers of dimethyldiallylammonium halide and of (meth)acrylic acid;

(c) methacryloyloxyethyltrimethylammonium halide

homopolymers and copolymers;

(d) polyquaternary ammonium polymers selected from:

- polymers of repeating units having formula (IV) below:

$$\begin{array}{c|c}
CH_{3} & CH_{2} \\
\hline
 & | \\
N^{+}_{Cl} (CH_{2})_{3} - N^{+}_{Cl} (CH_{2})_{5} \\
 & | \\
CH_{3} & CH_{3}
\end{array}$$
(IV)

- polymers of repeating units having formula (V) below:

$$\begin{array}{c|c} CH_{3} & C_{2}H_{5} \\ \hline & | & | \\ N & | \\ N^{5} & (CH_{2})_{3} & N^{5} & (CH_{2})_{3} \end{array} \end{array}$$

$$CH_{3} \qquad C_{2}H_{5} \qquad (V)$$

- and polymers of repeating units having formula (VI) below:

$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
\begin{pmatrix}
CH_{2} \\
\hline
\end{pmatrix}_{p} NH-CO-D-NH-(CH_{2})_{p} N-(CH_{2})_{2}-O-(CH_{2})_{2}
\end{array}$$
(VI)
$$\begin{array}{c|c}
CH_{3} & CH_{3} \\
\hline
CH_{3} & CH_{3}
\end{array}$$

| _ | wherein p r | represents an integer ranging from 1 to 6 approximately, D is | |
|-----------------------------|------------------|---|--|
| zero or r | epresents a grou | up -(CH ₂) _r -CO- wherein r represents a number equal to 4 or 7; | |
| <u>and</u> | | | |
| | (e) | vinylpyrrolidone copolymers containing cationic units. | |
| 4 | 1. (Original) | A composition according to Claim 1 in the form of a liquid, a | |
| shampoo, a cream, or a gel. | | | |
| 42 | 2. (Original) | A composition according to Claim 41 in the form of a | |
| shampoo | o . | | |